Paul C. Haughey, Reg. No. 31,836, Tel. (650) 326-2400
Attorney Docket No.: 009103-022700US
Title: Pulse Oximeter with Separate Ensemble Averaging for Oxygen Saturation and Heart Rate
Applicant: Clark R. Baker, Jr.
Appln. No.: 10/796,578
Replacement Sheet ___1___ of 4

FIG. 1

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Title: Pulse Oximeter with Seperate Ensemble Averaging for Oxygen Saturation and Heart Rate
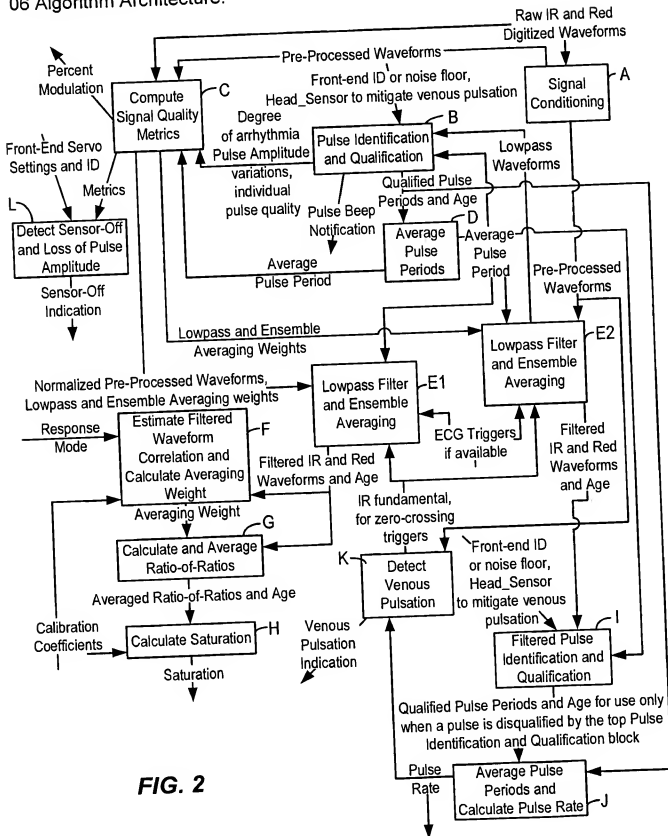Applicant: Clark R. Baker, Jr.
Appln. No.: 10/796,578
Replacement Sheet 2 of 4

06 Algorithm Architecture:

FIG. 2

Paul C. Haughey, Reg. No. 31,836, Tel. (650) 326-2400
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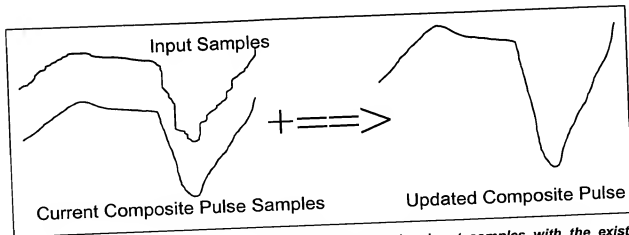Replacement Sheet _3_ of 4

FIG. 3   Composite Pulses are updated by averaging input samples with the existing
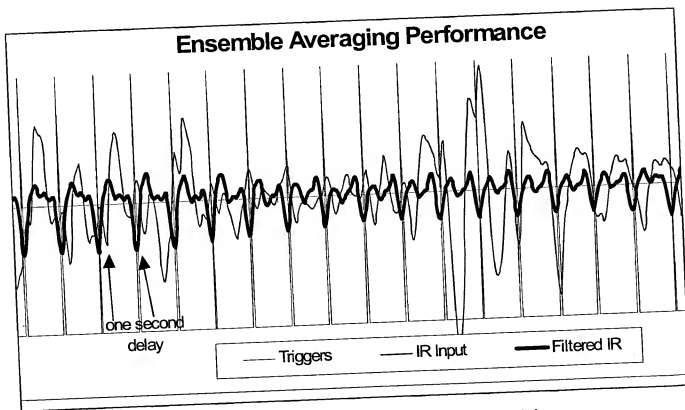Composite Pulse samples

FIG. 4 Example of the Ensemble Averaging subsystem's variable weighting

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FIG. 6 State Machine for Updating Buffer
Indices, i_Idx and j_Idx.

Initial state

Both *i* and *j* have overflown
the Composite Pulse Buffers

qualified trigger occurs
Move *i* to start of buffer

i passes end of buffer

Only *j* has overflown the
Composite Pulse Buffer

i passes end of buffer

qualified trigger occurs
Set *j* to *i* and move
i to start of buffer

Neither index has overflown
the Composite Pulse Buffer

Note: *i* and *j* are incremented each sample
in all states, until they overflow the buffer.

FIG. 7 State Machine for Updating First
Pulse in Composite Pulse Buffers

Initial state

Wait for Next Trigger

Qualified trigger occurs

Over 5 seconds
between triggers
"Clear" filter

Update Composite
Pulse Buffers using *i*

FIG. 5 State Machine for Updating
Second Pulse in Composite Pulse Buffers

Initial state

Wait for Next Trigger

Over 5 seconds

Qualified trigger occurs

between triggers
"Clear" Filter

Wait for a Second Trigger

Update Composite Pulse
Buffers using *j*

j overflowed
buffer

Qualified trigger
occurs

Suspend Updates of Composite
Pulse Buffers using *j*